

*“PGW, as the largest and one of the oldest municipal natural gas utilities in the U.S., recognizes the value in investing in the future. Installing a 200 kW microturbine at our headquarters demonstrates our commitment to our customers and the Philadelphia community and provides an opportunity to lead by example.”*

–Joseph Smith,  
Vice President of Marketing  
& Corporate Communications,  
at Philadelphia Gas Works

## PHILADELPHIA GAS WORKS MICROTURBINE COMBINED HEAT AND POWER PROJECT

### **PGW Recognized as a Leader**

Recognized for our efforts to advance Combined Heat and Power (CHP) technology, the Pennsylvania Department of Environmental Protection (PADEP) awarded a \$465,000 competitive matching grant to Philadelphia Gas Works (PGW) in December 2009. The Pennsylvania Green Energy Works! Grant, funded by the U.S. Department of Energy (DOE), gave PGW the opportunity to integrate state-of-the-art CHP technology into our existing Philadelphia facility at 800 West Montgomery Avenue.

Microturbines are considered emerging technology. The award facilitated PGW’s CHP project, which included a 200 kilowatt (kW) natural gas-fired microturbine, the largest, unit of this type sited in Philadelphia to date. The microturbine will generate electricity on-site to offset a portion of our headquarters’ electric grid demand. The CHP process is completed by capturing the turbine’s waste heat to run a 40 ton absorption chiller in the summer and supplement heat and hot water in the winter.

Securing the highly sought after grant is tremendous recognition from the government and a testament to PGW’s commitment to deploy energy efficient, innovative, environmentally-friendly and cost beneficial natural gas technologies.

### **Marketing and Educational Value**

The CHP project is scheduled for start up in the Spring of 2011. In addition to taking advantage of the economic and environmental benefits of natural gas, PGW will provide existing and potential customers easy access to witness firsthand the benefits of CHP energy efficient technology.





200 kilowatt (kW) natural gas-fired microturbine

Our customers will also benefit from PGW's tested role in the grant process. We can help bring CHP projects to reality by identifying project funding sources such as grants, rebates, and PGW incentives. Our experience also helps us to identify opportunities to leverage operational savings.

### Why Is CHP So Important Now?

Most Philadelphia facilities receive electricity from the grid. Electricity generated off-site is considerably less efficient since two-thirds of the energy is lost in transmission to the facility. In January 2011 electric price rate caps disappeared in Pennsylvania. Therefore, real-time or market-based pricing will impact the cost for electricity moving forward. Energy efficiency, environmental impact and fuel cost concerns are more important now than ever.

On-site generation of electricity results in the reduction of grid-supplied electric power and the resulting emissions. Environmental benefits of on-site electricity generation from CHP are well documented by the Department of Energy (DOE) and Energy Information Agency (EIA). By eliminating transmission losses, less fuel is required to generate a kW of electricity at its point of use therefore fewer pollutants are emitted into the atmosphere.

### Why Is CHP So Important to You?

#### Proven Energy Efficiency and Green Technology...

On-site electric power generation configured in a CHP process is a very efficient use of BTUs. A single energy source creates multiple forms of energy. Greater energy efficiency results in less emission production, which is better for the environment.

PGW's microturbine CHP plant is estimated to experience 84% reduction in NO<sub>x</sub>, 100% reduction in SO<sub>x</sub>, and 33% reduction in carbon dioxide (CO<sub>2</sub>) or 524 tons of avoided carbon dioxide production per year. This is equal to the removal of 87 cars from the road or the carbon dioxide absorption of 108 acres of forest.

#### ... and SAVINGS!

The cost to generate a kilowatt of electricity on-site is often less than purchasing power from the grid – especially when waste heat is used to operate other equipment and factored into the equation is the displaced cost of the additional fuel purchase.

PGW's microturbine CHP project is conservatively estimated to save the company \$130,000 per year from combined energy operating budgets.

